ONAP Orchestration for Multi-Access Edge Cloud

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Agenda

- Why Multi-Access Edge Cloud?
- Orchestration as a key control point
- ONAP orchestration for Multi-Access Edge Cloud
- Future Direction ...
Globally, IP traffic (consumer & business, mobile & fixed) will reach 278.1 Exabytes per month in 2021, up from 96.1 Exabytes per month in 2016.

- Cisco VNI, Sep. 2018

Sample countries with National Broadband initiatives

~ 1Billion FTTH users by 2022
Operator Access Network challenges

- Device Proliferation
- Complex Protocols
- Service Support
- High OPEX/CAPEX
- Operational Issues
- Vendor lock-in
- Service Monetization
- Vendor lock-in
Operator – Next Gen Technology Adoption

- SDN
- NFV
- Cloudification
- White Box & Disaggregation
- Open Source
Edge Cloud Evolution

Router, FW, VOIP, IPS ...

DHCP, NAT, VOIP ...

CPE

BBU

Virtualization Centralization

Edge Cloud

VNFs

vCPE vFW

IoT IPS

MEC APPS

MEC DPI

vEPC vCU

vEPC SEBA

Distributed Cloud

Core Cloud

BBU CPE

vEPC SEBA

EPC

ANY VNF
Multi-Access Cloud for the Edge

Global Orchestrator

- PON Network
- NFVI
- Servers
- VNFs
- VNFs
- ROUTER
- SP Backbone
- Backbone
- IP / MPLS
- Access
- Infrastructure Edge
- Edge Cloud

- Residential Services
- Business Connectivity Services
- Mobile Wireless Services
- Device Edge
- Infrastructure Edge
- Edge Cloud

- IoT GW
- Multi-Access Cloud for the Edge

- IPTV
- VOP
- HSI
- Internet
- NFV
- Business Services
- Mobile Services
Value of Multi-access convergence

- Cost savings by creating a single MANO domain for wired and wireless in the access network
- Increased velocity of new service roll-outs
- Example: ONF COMAC
  - Disaggregate all mobile and broadband components
  - Common data plane and control plane
    - UPF & BNG
There will be thousands of Edges
Need for a Global Orchestrator

Thousands of Edge Clouds

Need for a Global Orchestrator
ONAP for Multi-Access Edge Orchestration
ONAP strategy for Core and Edge

- Use ONAP as End2End Orchestrator
- Centralized Monitoring of Access-Edge
- Configure, Manage, Monitor and Closed Loop Automation
- Integration with the OSS/BSS Systems
Multi-Access Telco Cloud for the Edge

Global Orchestrator (ONAP)

PON Network

- Monitor
- Manage
- Closed loops

OLT

Netsia MAC Platform

SEBA vRAN D-SFC

Router

SP Backbone

Device Edge

Infrastructure Edge

Edge Cloud

Access

IP / MPLS

Residential Services

Business Connectivity Services

Mobile Wireless Services

IPTV

VoIP

Internet

HSI

Business Services

Mobile Services

EPC / IoT

Connect
Multi Access Edge Cloud Orchestration - RAN

(ONAP, OSS/BSS Systems, etc)

Business Connectivity Services

Residential Services

Mobile Services

Fixed Mobile Coordination

Intelligent RAN Controller

Switching Fabric

NFVI Platform

OLT

vCU

vCU

vCU

vHAG

Splitter

ONT

ONT

ONT

DU

Internet

vEPC

vEPC

Access

Netsia MAC

Core

Infrastructure Edge
ONAP with E2E slicing

ONAP

End-to-end Network Slice Manager (NSMF)

OLT Slice Manager (TN Manager)

RAN Slice Manager (RAN NSSMF)

Core Slice Manager (Core NSSMF)

DU ONT

OLT

DU ONT

DU ONT

RAN Intelligent Controller

vCU vCU

5G vCore

5G vCore
POC: Multi-Access Cloud for Next Gen CO
Seba is fully container based – ONAP cannot onboard
The decision is made to have SEBA represented as a simple PNF to ONAP
5G was the only use case that was using PNF approach
We based OSAM architecture on 5G
OSAM Architecture

OSS/BSS

OSAM CORE

VID

OOF

A&AI

SO

APPC

DCAE

ONAP

OSAM Gateway

GRPC

NEM

VoltHA

SEBA Pod 1

OSAM Gateway

GRPC

NEM

VoltHA

SEBA Pod 2

OSAM Gateway
Future Direction
• SDN-R is an approved ONAP project as subproject to ONAP SDNC. The SDN-R project enhances SDNC by adding functions for wireless technologies.
• Exploring SDN-F (Fixed Broadband) for PON (Passive Optical Network)
ONAP Integration with SEBA Central

ONAP

OSS/BSS Systems

OSS/BSS API Gateway

HOLMES

ONAP

POLICY

SDN-F

SO

DCAE

North Bound Integration

CRM

PROVISIONING

INVENTORY

FCAPS

SEBA

GPON NW

WB OLT
Thank You